

Report on P-DAN Activities in AIT

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(P-DAN)

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Asian Institute of Technology (AIT)

November 2013

Data Analysis Node – DAN

JPTM Terms of Reference

Data Analysis Node (DAN)

The Node for the data analysis

DPN provide its own satellite data to the DAN

Data policy of each DPN is decided by each DPN

DAN member shall implement the following tasks;

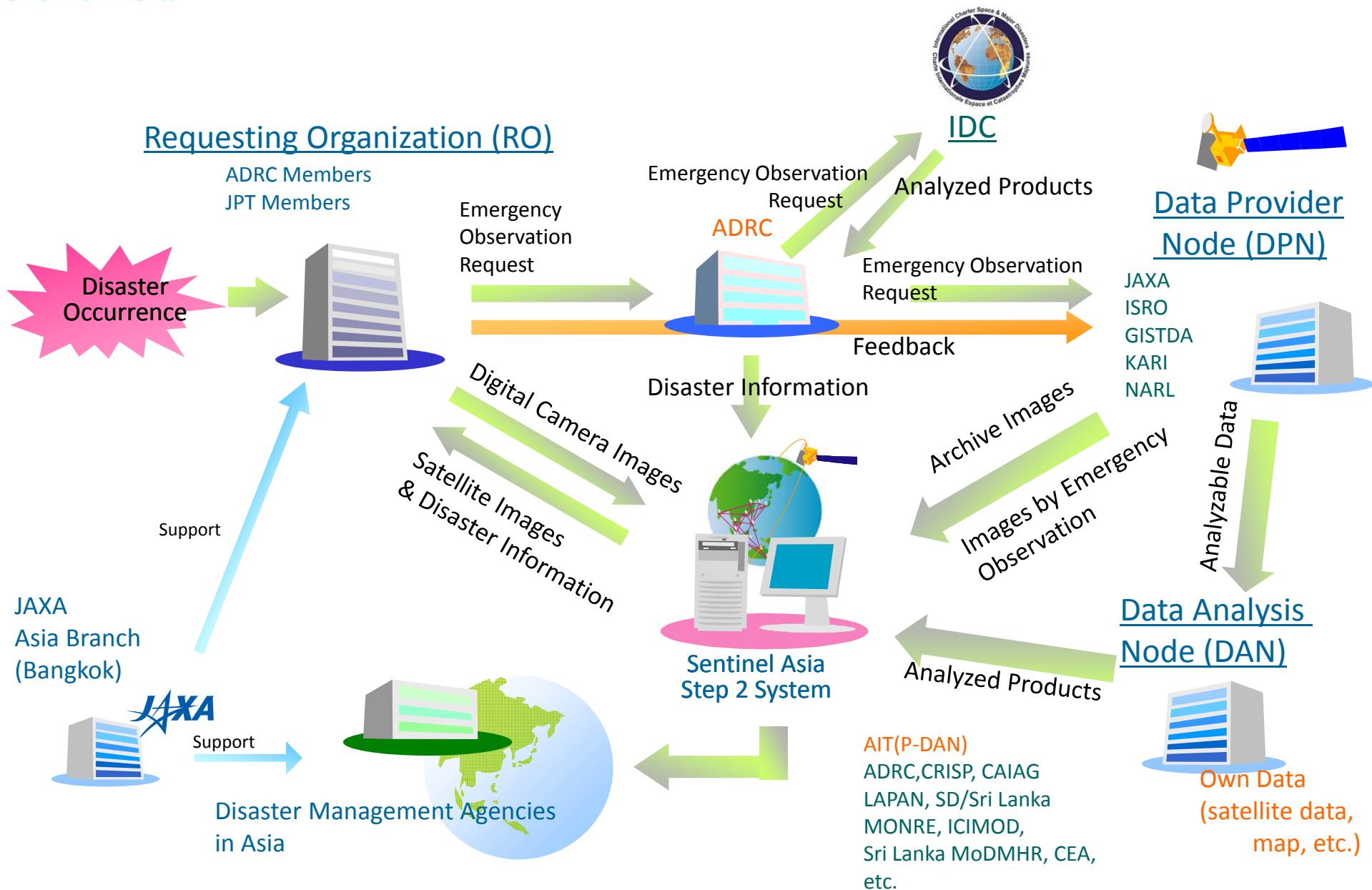
- a) Analyze the satellite data, which is provided by DPN
- b) Make value added product
- c) Disclose the result through the Sentinel Asia System within the domestic legislation of each DAN permits

Principal Data Analysis Node (P-DAN)

The Node for coordinating the data analysis

AIT is working for P-DAN, and Project Manager (PM) of International Disaster Charter Capacity Building (Sentinel Asia System Training, PM training, Success Story)

Overall Flow of Activation



Survey on DPN and DAN

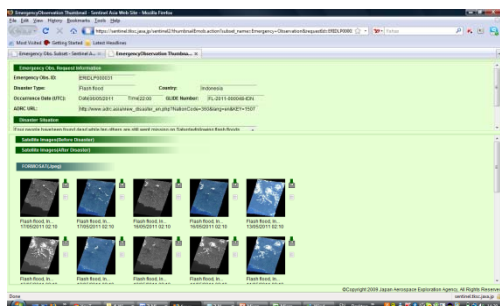
Sentinel Asia, DPN and DAN investigation

General Information	DPN or DAN	DAN (P-DAN)
	Organization	Geoinformatics Center, Asian Institute of Technology
	Analysis of IDC (Yes or No) If yes, who analyze?	Yes
	Contact Information	Name: Masahiko Nagai E-mail: nagaim@ait.ac.th Phone: +66-2-524-5599 / +66-89-025-0484 Fax: +66-2-524-6147
Human Resources Information	Researcher's Information 1	Name: Masahiko Nagai E-mail: nagaim@ait.ac.th Phone: +66-2-524-5599 / +66-89-025-0484 Fax: +66-2-524-6147
	Researcher's Information 2	Name: Kulapramote Prathumchai E-mail: kulapramote@ait.ac.th Phone: +66-2-524-6403 Fax: +66-2-524-6147
	Researcher's Information 3	Name: E-mail: Phone: Fax:
Analysis Information	Main target regions/ countries for analysis	South and South-East Asian region. We will support all regions.
	Main target disasters for analysis	Flood, Landslide, Earthquake, Forest Fire and Tsunami
	Main target sensors for analysis	ALOS-PALSAR/PRISM/AVNIR and MODIS, and all
	Available facilities for analysis	Hardware (GPS or digital camera), software (ArcGIS and ENVI) and necessary skills/
	Available supporting datasets for analysis	Remote sensing data in archive, basic GIS data layers of different countries. We will use free GIS data set from internet as well as Google's/
	Sources of dataset / collaboration with other line-agencies	JAXA as well as Government agencies. In case of huge disaster, we can get support from AIT students. Those students come from many Asian countries.
Other Information	Exclusive conditions, if any	No/
	Additional comments	As a regional Center, we need more GIS datasets in each country to prepare better value added products for emergency response. Also, we are ready to support other agency for analysis and map making.

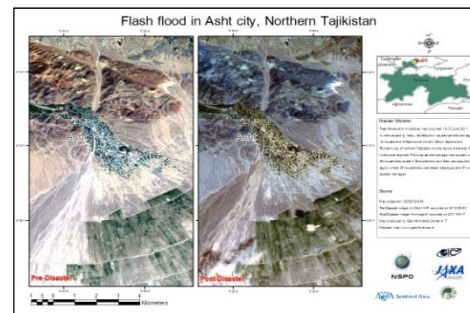
Support DAN activities

- Construct human network
- Help each other
- Sharing information
- Sharing activity
- 31 reports (total 36 organizations)

Procedure for Data Analysis (Value Adding)



Satellite data acquisition

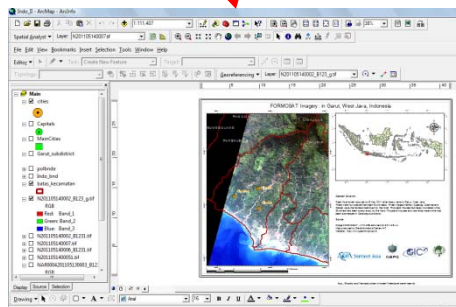


Value added product

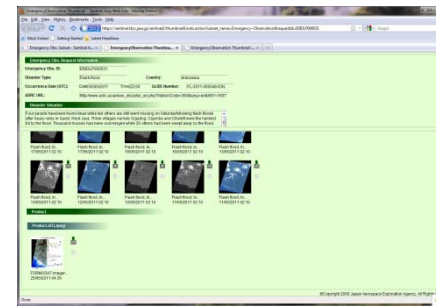
- File Service (DropBox, Google Drive)

- Copyright
- Own web page

- Free GIS Data & Software
- Map template
- Capacity Building
- Academic Collaboration



Data analysis (Value adding)



Upload to Sentinel Asia System

Flash flood in Asht city, Northern Tajikistan

Pre-Disaster image



Post-Disaster image



Location

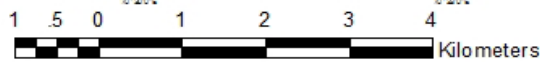


Disaster Information

Disaster Situation:
Flash floods and mudslides had occurred 12-13 June 2011. It was caused by heavy rainfalls and caused severe damage to houses and infrastructure in Asht, Ganjin regions and Penjshent city of northern Tajikistan. As the report, there are no victims are reported. The most severe damage was caused to 86 households locate in Bobodarkhon and Saro Jamoats of Asht region where 35 households were totally destroyed and 51 were partially damaged.

Source:
Map projection: GCS/WGS 84
Pre-Disaster Image: ALOS/AVNIR, acquired on 2010-08-30
Post-Disaster Image: Formosat-2, acquired on 2011-06-17
Map produced by GeoInformatics Center, AIT
Website: <http://www.geoinfo.aik.ac.th>

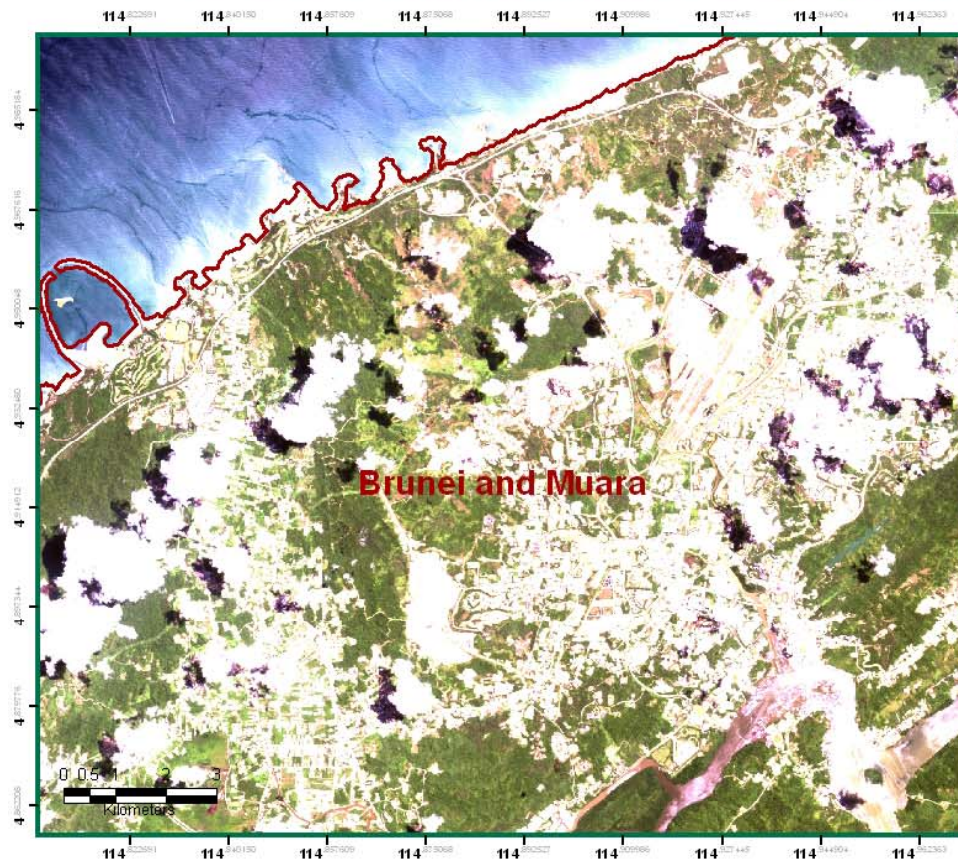
Source



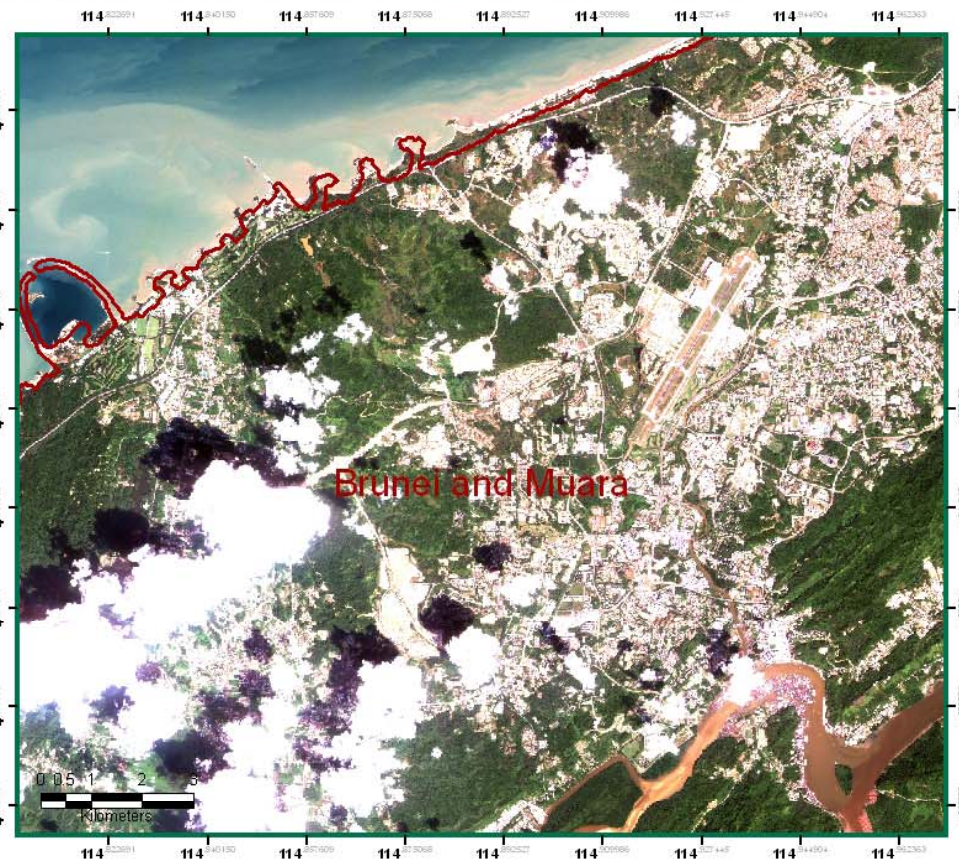
Logo Copyright



Before and After flood disaster images of Brunei-Muara, Brunei



Pre-Disaster: 27/04/2008



Post Disaster: 14/12/12



MAP INFORMATION

The heavy rains in the Brunei-Muara District during 4 to 6 December 2012, that inundated dozens of homes, some with waist-high flood water and triggered landslides that have become major causes.

Map Projection: Geographic WGS84

Data Source:

Pre-Disaster image: ALOS AV2 acquired on 27 April 2008

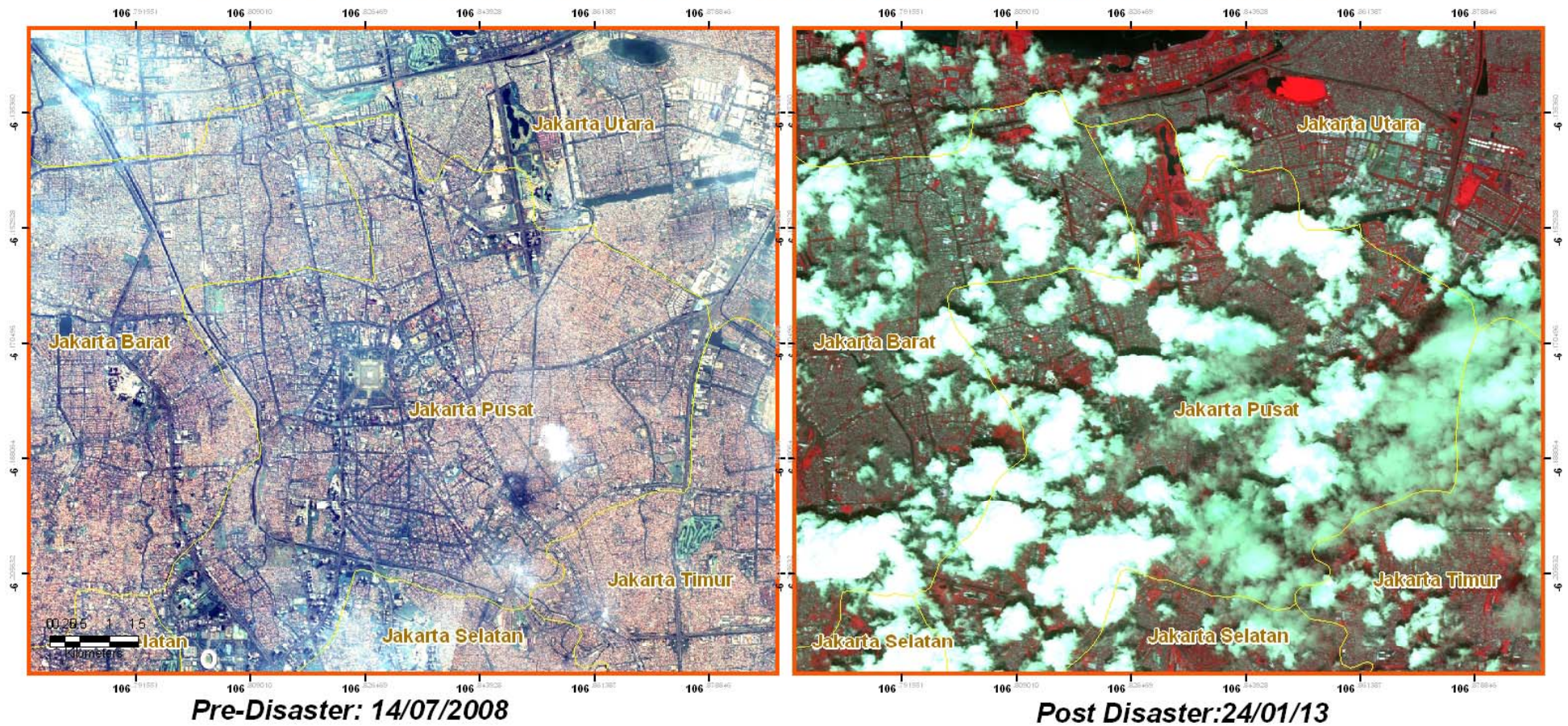
Post Disaster image: FORMOSAT acquired on 14 December 2012

Map Produced by: Asian Institute of Technology on 9 January 2013

Website: <http://www.ait.asia>



Before and After flood disaster images of Jagaka, Indonesia



MAP INFORMATION

Map Projection: Geographic WGS84

Data Source:

Pre-Disaster image: ALOS AV2 acquired on 14 July 2008

Post Disaster image: FORMOSAT acquired on 24 January 2013

Map Produced by: Asian Institute of Technology on 29 January 2013

Website: <http://www.ait.asia>



Earthquake in Ya'An city, Sichuan, China



Pre-Disaster: 28/12/2010



Post Disaster: 22/04/13



MAP INFORMATION

Map Projection: Geographic WGS84 Zone: 51N

Data Source:

Pre-Disaster image: ALOS Pan-Shape acquired on 28 December 2010

Post Disaster image: RISAT-1 FRS1 HH acquired on 22 April 2013

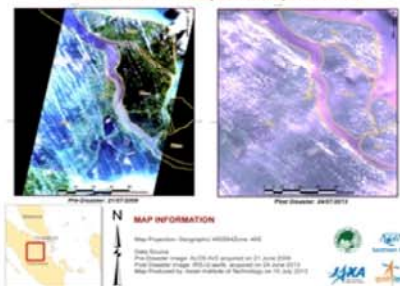
Map Produced by: Asian Institute of Technology on 27 April 2013

Website: <http://www.ait.asia>



Emergency Response Maps

Forest Fire in Riau, Sumatra, Indonesia



Forest Fire in Riau, Sumatra, Indonesia

Map Information

Map Projection: Geographic WGS84Zone: 48S

Data Source:

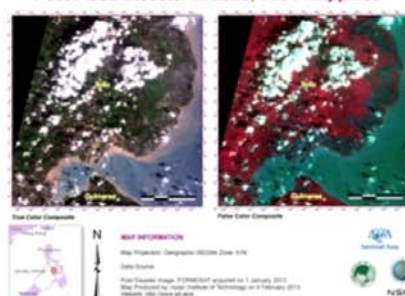
Pre-Disaster image: ALOS AV2 acquired on 21 June 2009

Post Disaster image: IRS-r2-awifs acquired on 24 June 2013

Map Produced by: Asian Institute of Technology on 15 July 2013

[Download high resolution image](#)

Post Flood Disaster in Iloilo, The Philippines



Post Flood Disaster in Iloilo, The Philippines

Map Information:

Map Projection: Geographic WGS84 Zone: 51N

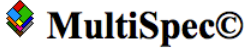




Data Source:

Post Disaster image: FORMOSAT acquired on 1 January 2013

Map Produced by: Asian Institute of Technology on 4 February 2013

[Download high resolution image](#)

Open Source Software

No.	Software name	Summary Functions	URL
1	MultiSpec School of Electrical and Computer Engineering Purdue University 	Raster and Imagery handling OS(Windows,MacOSx) Data display, Import/Export data format Classification function	https://engineering.purdue.edu/~biehl/MultiSpec/index.html
2	Quantum GIS GNU Public License 	Vector/Raster handling OS(Windows,MacOSx,Linux,Web) GIS analysis function Layout mapping Add plug-in more functions with GRASS	http://www.qgis.org/
3	GRASS Geographic Resources Analysis Support System Open Source Geospatial Foundation 	Vector/Raster handling, Imagery map OS(Windows,MacOSx,Linux,Web) Fully RS/GIS analysis function Layout mapping	http://grass.osgeo.org
4	MapWindow Geospatial Software Lab. Idaho State University 	Vector/Raster handling OS(Windows) RS/GIS analysis function Layout mapping	http://www.mapwindow.org
5	ILWIS Integrated Land and Water Information System Faculty of Geo-Information Science and Earth Observation(ITC), University of Twente	Vector/Raster handling, Imagery map OS(Windows,MacOSx,Linux) Fully RS/GIS analysis function Layout mapping 	http://www.ilwis.org



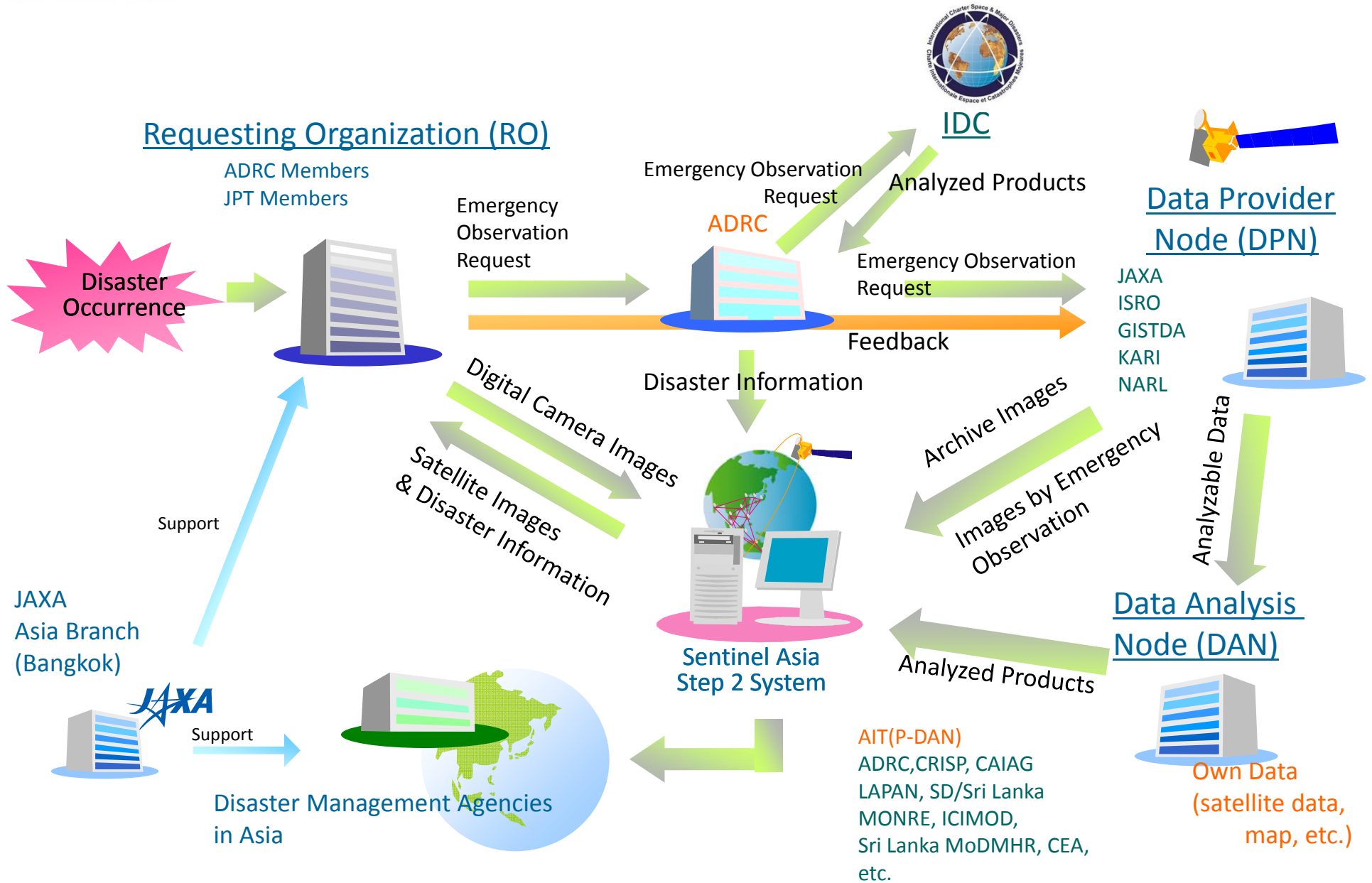
Sentinel Asia

Free GIS Dataset



No.	Source	Summary service	URL
1	DIVA-GIS CGIAR Institute	Free spatial data for each country level such as; Administrative areas (boundaries) Inland water, Roads , Railroads Elevation, Land cover Population, Climate, Gazetteer	http://www.diva-gis.org
2	SALB (Second Administrative Level Boundaries) UN Geographic Information Working Group	Free spatial data of country level of administration boundary; Administrative areas (boundaries) Level 1,2	http://www.unsalb.org
3	EORC Earth of Research Center Japan Aerospace Exploration Agency (JAXA)	Free satellite images (ALOS) such as; PALSAR 10m., 50 m.Orhtorectified, 500 m. Mosaic Global Forest / Non-forest map International Polar Year Dataset High Resolution Land-Use and Land-Cover Map Glacial Lake Inventory of Bhutan	http://www.eorc.jaxa.jp/ALOS/en/dataset/dataset_index.htm
4	DCW Digital Chart of the World Stanford University	Provide a comprehensive 1:1,000,000 scale vector basemap of the world Country level, Global level Global climate data Species occurrence data Crop (genebank) collection data Near global 90 meter resolution elevation data	http://www-sul.stanford.edu/depts/gis/DCW.html
5	GNS Geo Name Service National Geo Spatial-Intergance Agency	Gazetteer for each country Geographic name and location	http://earth-info.nga.mil/gns/html/namesfiles.htm

Overall Flow of Activation





Escalation from Sentinel Asia



2013

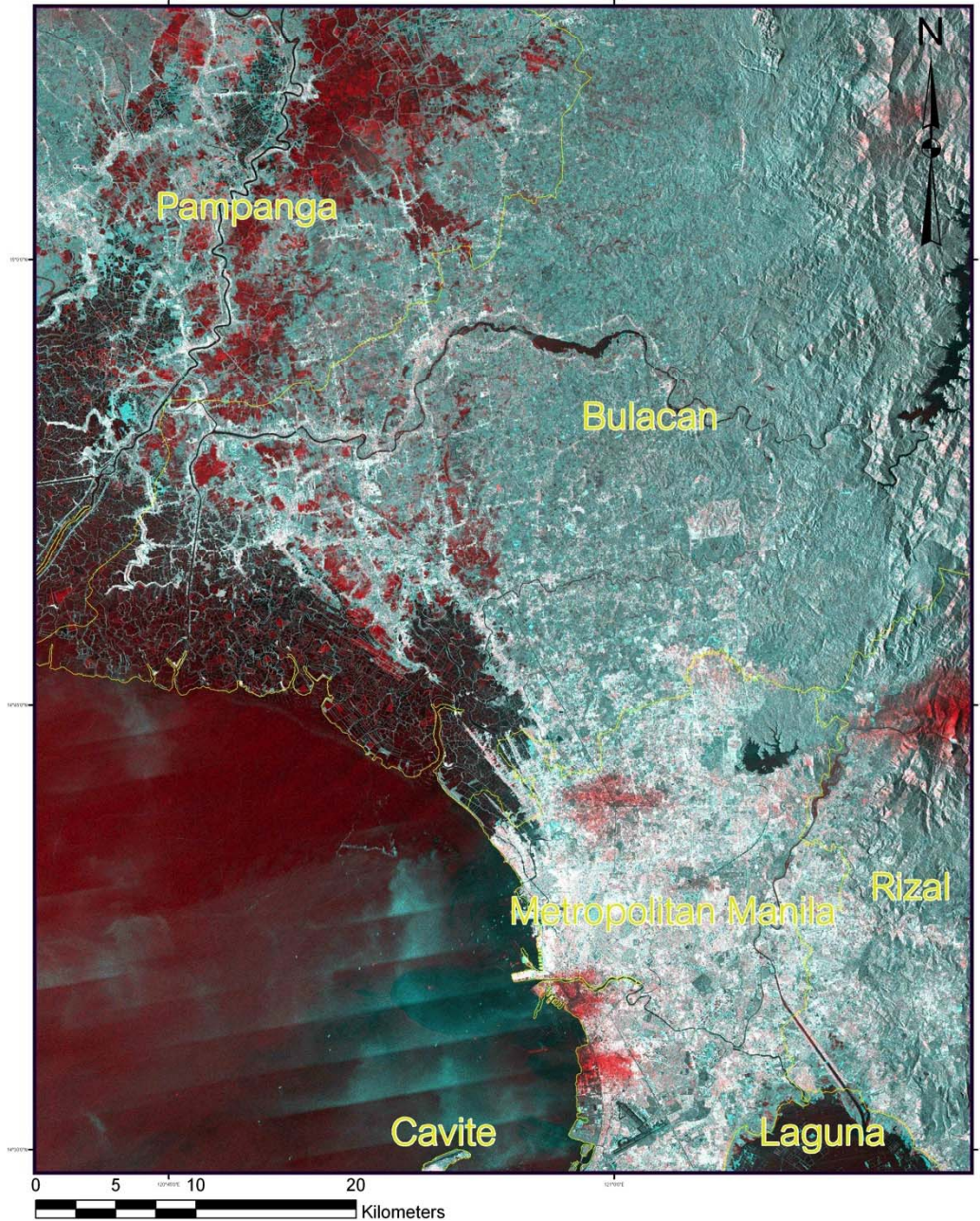
- ▶ **22 November** Flood in Oman
- ▶ **10 November** Tropical Storm Haiyan in Vietnam
- ▶ **8 November** Typhoon Haiyan in the Philippines
- ▶ **5 November** Volcano in Indonesia
- ▶ **21 October** Flood in Cambodia
- ▶ **18 October** Typhoon Nari in Vietnam
- ▶ **17 October** Fires in Australia
- ▶ **16 October** Landslide on Izu Oshima Island, Japan
- ▶ **15 October** Earthquake in Bohol Island, Philippines
- ▶ **12 October** Cyclone Phailin in India
- ▶ **24 September** Earthquake in Pakistan
- ▶ **19 September** Ubinas Volcano in Moquegua, Peru
- ▶ **13 September** Flood in Colorado, USA
- ▶ **10 September** Fire in Cordoba, Argentina
- ▶ **25 August** Flood in Senegal
- ▶ **22 August** Flood in Pakistan
- ▶ **19 August** Flood in Russian Federation
- ▶ **19 August** Flood, landslide and storm in Manila, the Philippines
- ▶ **16 August** Floods in northeast China
- ▶ **6 August** Floods in Sudan (Khartoum State)
- ▶ **2 August** Floods in Myanmar
- ▶ **29 July** Floods in Japan
- ▶ **25 July** Floods in Chanthaburi Province, Thailand

Escalation from Sentinel Asia

Call ID	Date	Disaster	PM
423,424	05 Dec 2012	Super Typhoon in Southern Philippines	AIT
443	21 Jul 2013	Flood in Thailand	AIT
444	29 Jul 2013	Yamaguchi and Shimane, Japan	AIT
448	19 Aug 2013	Flood, landslide and storm in Manila, the Philippines	PHIVOLCS
459	15 Oct 2013	Bohol Island, the Philippines	PHIVOLCS
460	16 Oct 2013	Landslide in Japan	AIT
462	18 Oct 2013	Flood and Ocean Storm in Vietnam	AIT
467	10 Nov 2013	Tropical Storm Haiyan in Vietnam	LAPAN

Composited Image of Flood in The Philippines

Ser



MAP INFORMATION

The composite image of TerraSAR-X image is shown after flood in red color patches. Result is not verified with ground truth data.

Map Projection: Geographic WGS84Zone: 51N

Data Source:

Pre-Disaster image: TerraSAR-X acquired on 20 March 2011

Post Disaster image: TerraSAR-X acquired on 21 Aug 2013

Map Produced by: Asian Institute of Technology on 1 August 2013

TerraSAR-X/TanDEM-X © 2013 German Aerospace Center (DLR),
2013 Astrium Services / Infoterra GmbH



PM Training from Sentinel Asia



Date: 20-21 June 2013
Venue: PAGASA, Philippines

PAGASA, PHIVOLCS, Manila Observatory

Date: 25-26 November 2013
Venue: JAXA Bangkok Office

GISTDA, Manila Observatory, AIT

Scenario for Sentinel Asia Activation

Sharing “know-how”

Create Best Practice

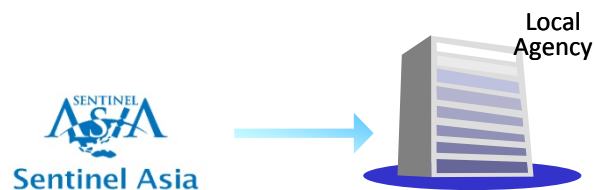


Who is requestor?

Where is disaster area?

What satellite data is necessary?

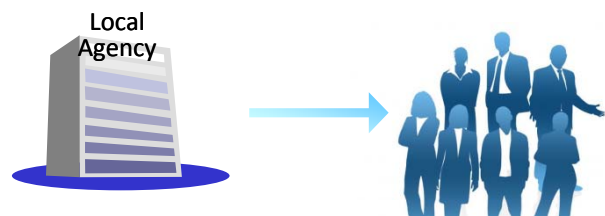
What products is necessary?



Data Provision

How to download? (by post?)

Who need satellite data?



Analysis
Map making

Who analyze and make map?

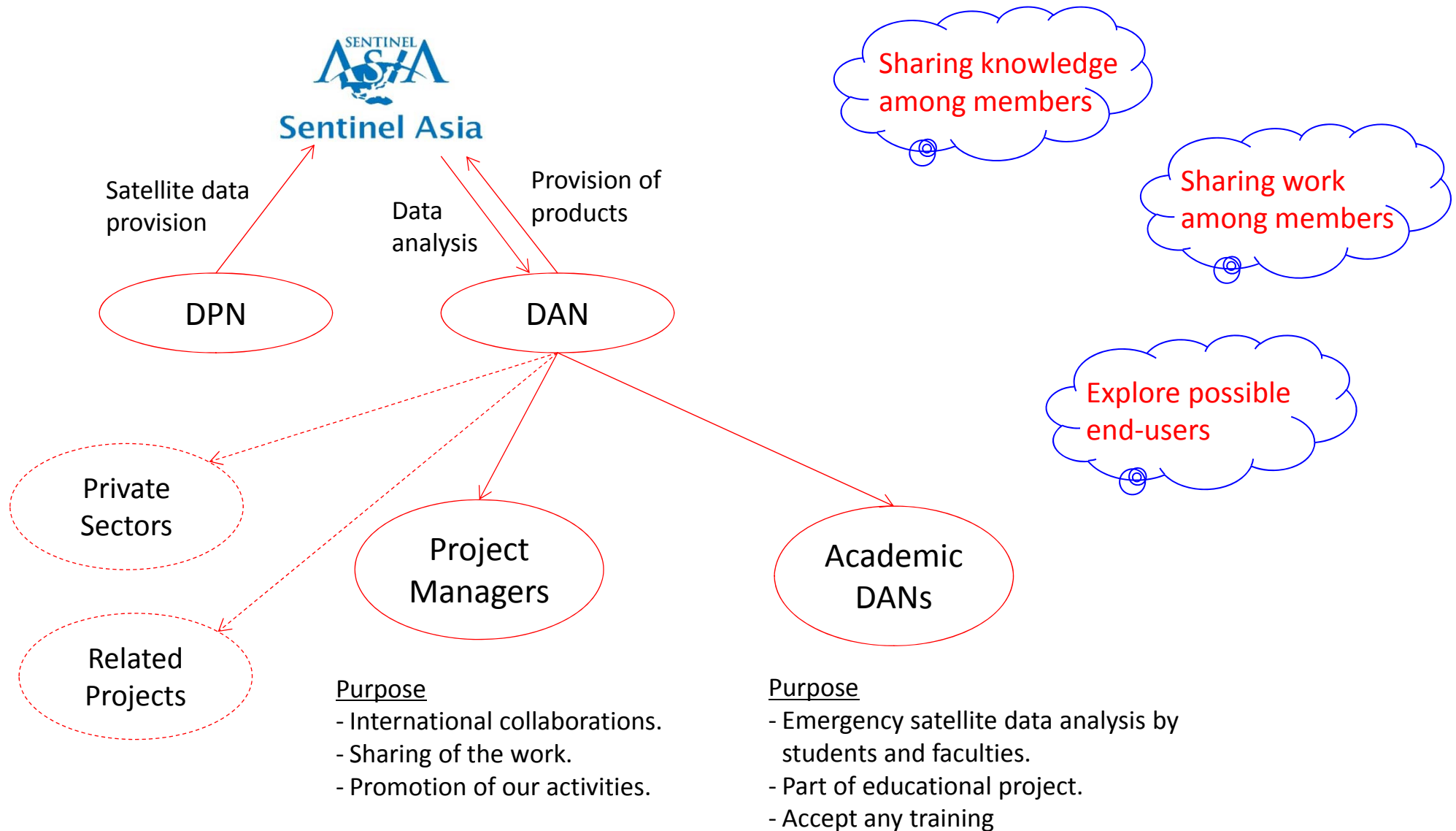
What is priority of analysis?

e.g. Damage extent? SAR? High resolution?

How to avoid duplication?

How to deliver to end-user?

To Expand DAN Activities



Thank you